



Archaeological Resources

Airport Vicinity Development Checklist

Parking Study

Trip Generation Comparison

Parking Master Plan



## TRANSPORTATION IMPACT AND MITIGATION ANALYSIS

Scottsdale Road and Jenan Drive  
Scottsdale, Arizona

Prepared for:

**Camelot Homes, Inc.**

**Kimley»Horn**

# TRANSPORTATION IMPACT AND MITIGATION ANALYSIS

## Scottsdale Road and Jenan Drive Scottsdale, Arizona

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## 1.0 EXECUTIVE SUMMARY

### 1.1 INTRODUCTION

This report documents a traffic impact analysis performed for a proposed residential development on the south side of Jenan Drive between Scottsdale Road and 74<sup>th</sup> Place in Scottsdale, Arizona. The site will consist of 10 single-family detached housing units and is anticipated to be built out by 2020.

### 1.2 REPORT PURPOSE AND OBJECTIVES

Kimley-Horn and Associates, Inc., has been retained by Camelot Homes, Inc to perform the traffic impact analysis for the proposed development.

The purpose of this study is to address traffic and transportation impacts of the proposed development on surrounding streets and intersections. This traffic impact study was prepared based on criteria set forth by the City of Scottsdale Category 2 Traffic Impact and Mitigation Analysis (TIMA). The specific objectives of this study are:

- To evaluate lane requirements on all existing roadway links and at all existing intersections within the study area;
- To determine future level of service (LOS) for all existing intersections within the study area and recommend any capacity-related improvements;
- To determine necessary lane configurations at all new driveways within the proposed development in order to provide acceptable future levels of service;
- To evaluate the need for auxiliary lanes at all study area intersections; and
- To evaluate the need for future traffic signals.

### 1.3 PRINCIPAL FINDINGS AND RECOMMENDATIONS

The proposed development is expected to generate 96 daily trips, with 7 trips occurring in the AM peak hour and 10 trips occurring in the PM peak hour.

- The trip generation comparison of the proposed development plan versus allowed development under current zoning shows a slight increase in trip generation. The trip generation change is not expected to significantly impact traffic conditions.
- The unsignalized intersections are expected to operate at a satisfactory LOS in 2020, with the exception of minor movements at the intersection of Scottsdale Road and Jenan Drive. Drivers are anticipated to use alternate routes which utilize adjacent signalized intersections to access the roadway network during these peak periods. It is anticipated that during non-peak periods the LOS of minor movements will improve.
- The site driveway operates at an acceptable level of service in 2020 total traffic conditions.

- The on-site storage at the site driveway is expected to be sufficient to accommodate projected site traffic volumes and satisfies the gated private street and driveway entrance requirements.
- It is recommended that site triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. The landscaping within site triangles must not obstruct drivers' views of the adjacent travel lanes.

## 2.0 PROPOSED DEVELOPMENT

### 2.1 SITE LOCATION

The proposed development, a single-family detached housing development, is located on the south side of Jenan Drive between Scottsdale Road and 74<sup>th</sup> Place in Scottsdale, Arizona. The project location is shown in **Figure 1**.

### 2.2 LAND USE AND SITE PLAN

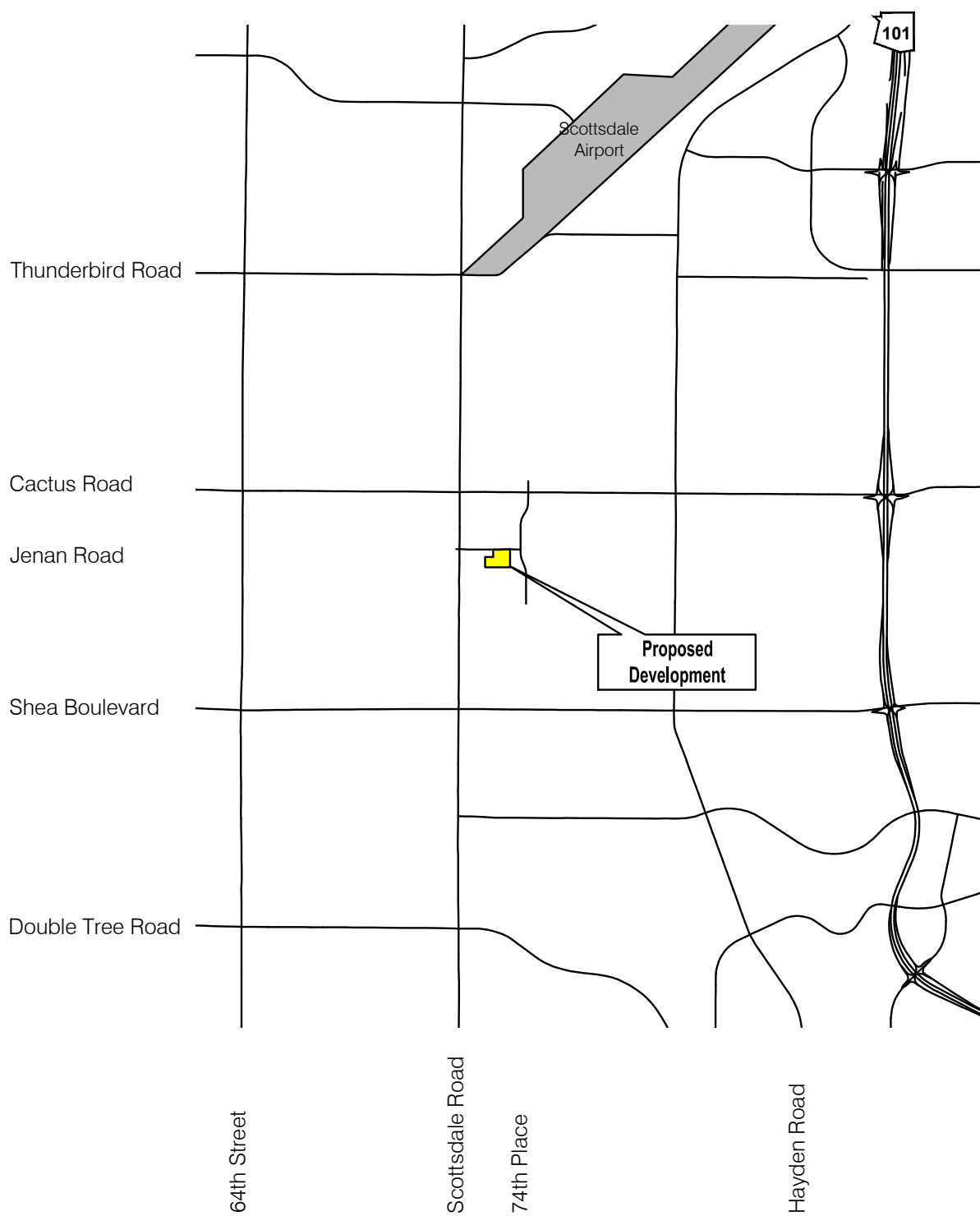
The overall development consists of 10 single-family dwelling units. The total site area is on approximately 5.7 acres. The layout of the site is illustrated in **Figure 2**.

### 2.3 SITE ACCESSIBILITY

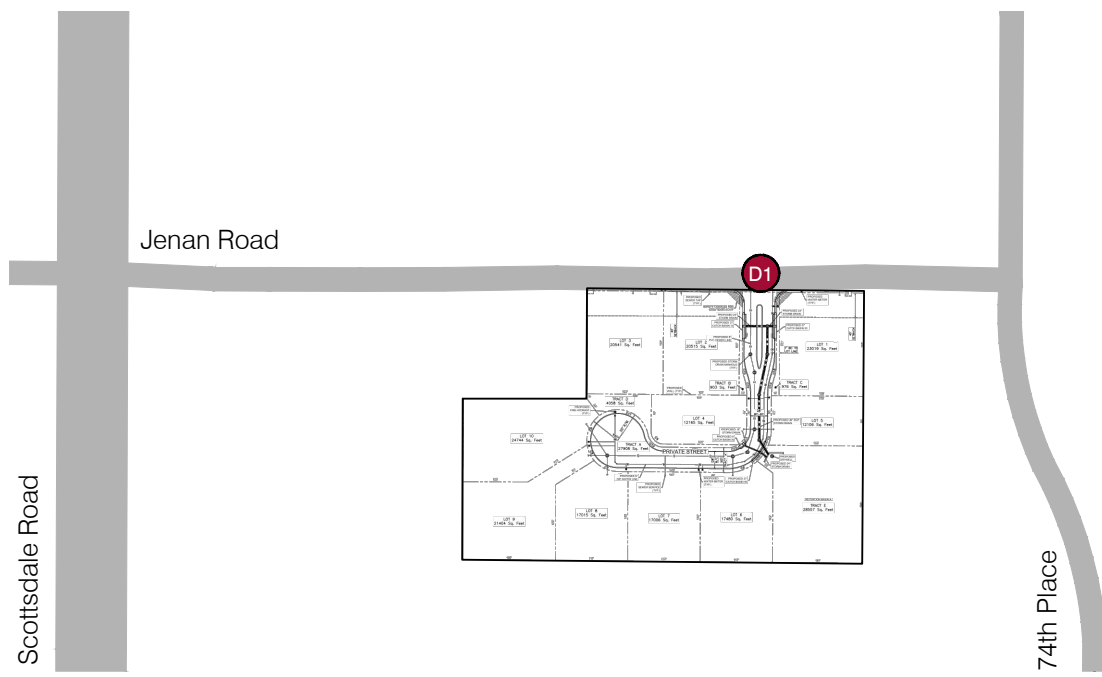
The site is accessed locally via Scottsdale Road, Jenan Drive and 74<sup>th</sup> Place. Regional access is expected to be provided by Loop 101 and by other arterial streets in the vicinity such as Cactus Road and Shea Boulevard. The Loop 101 runs north-south and is located approximately two miles east of the site.

### 2.4 SITE CIRCULATION

The site plan is shown in previously referenced **Figure 2**. The site consists of one driveway. Driveway D1 is proposed as a full access driveway onto Jenan Drive approximately 1,150 feet east of Scottsdale Road. The proposed site is a cul-de-sac serving less than 25 single-family dwelling units, therefore, the City of Scottsdale Design Standards and Policies Section 5-3.800 criteria permits a single access development.







LEGEND	
	DRIVEWAYS

## 3.0 STUDY AREA

### 3.1 STUDY AREA

The study area includes the intersections of Scottsdale Road/Jenan Drive and 74<sup>th</sup> Place/Jenan Drive as well as the site driveway along Jenan Drive.

### 3.2 ADJACENT LAND USE

The area in the vicinity of the site contains a mix of land uses that is comprised primarily of residential, retail, and recreational land use types. The North Scottsdale United Methodist Church is located on the southeast corner of the intersection of Scottsdale Road and Jenan Drive. The WhizKidz Preschool occupies the northeast corner of the intersection of Scottsdale Road and Jenan Drive. The majority of the surrounding land uses are primarily single-family residential. The Loop 101 exists approximately two miles to the east of Scottsdale Road. The Scottsdale Airport exists approximately one and a half miles north of the site.

## 4.0 EXISTING CONDITIONS

### 4.1 PHYSICAL CHARACTERISTICS

The existing roadway network within the study area includes Scottsdale Road, Jenan Drive and 74<sup>th</sup> Place. The existing intersection lane use and traffic control is shown in **Figure 3**.

**Scottsdale Road** currently extends north-south with three lanes in each direction with a raised center median. Curb, gutter and sidewalks exist on both sides of the roadway in the vicinity of the site. The posted speed limit is 45mph in both directions. The City of Scottsdale classifies Scottsdale Road as a major arterial suburban road in the vicinity of the site.

**Jenan Drive** currently extends east-west in the vicinity of the site with one lane in each direction and a posted speed limit of 25mph.

**74<sup>th</sup> Place** currently extends north-south in the vicinity of the site with one lane in each direction and a posted speed limit of 25 mph. Curb and gutter exists on both sides of the roadway in the vicinity of the site.

The existing intersections analyzed in this report are Scottsdale Road/Jenan Drive (stop-controlled in the east-west direction) and 74<sup>th</sup> Place/Jenan Drive (stop-controlled for the eastbound approach).

### 4.2 TRAFFIC VOLUMES

Turning movement counts were collected at the intersections of Scottsdale Road/Jenan Drive and 74<sup>th</sup> Place/Jenan Drive on Thursday, July 26, 2018. The counts were performed between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM. The results of these counts are shown in **Figure 3**. A copy of the counts is attached in the **Appendix**.

In addition to peak hour turning movement counts, 24-hour bidirectional volume counts were performed along Jenan Drive between Scottsdale Road and 74<sup>th</sup> Place on Thursday, July 26, 2018. A copy of the counts is attached in the **Appendix**.

### 4.3 LEVEL OF SERVICE

The LOS at the intersections of Jenan Drive with Scottsdale Road and 74<sup>th</sup> Place was evaluated using the traffic counts collected on Thursday, July 26, 2018. The LOS for the intersections was evaluated using the *Highway Capacity Manual 6<sup>th</sup> Edition* methodology for unsignalized intersections. The existing intersection geometry and control, shown in **Figure 3**, was used to obtain the LOS. The results of this analysis are shown in **Table 2**.

**Table 1. Existing Level of Service: Unsignalized Intersections**

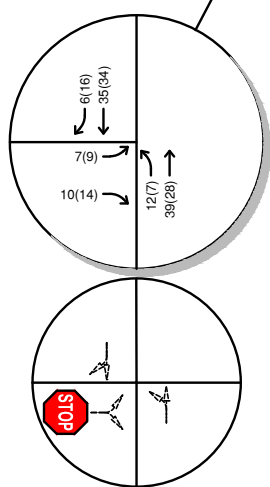
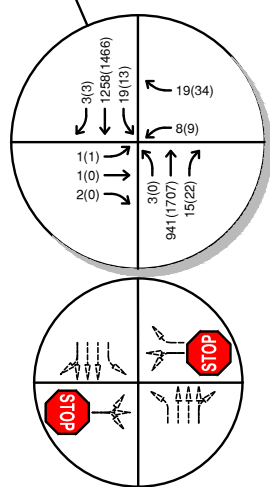
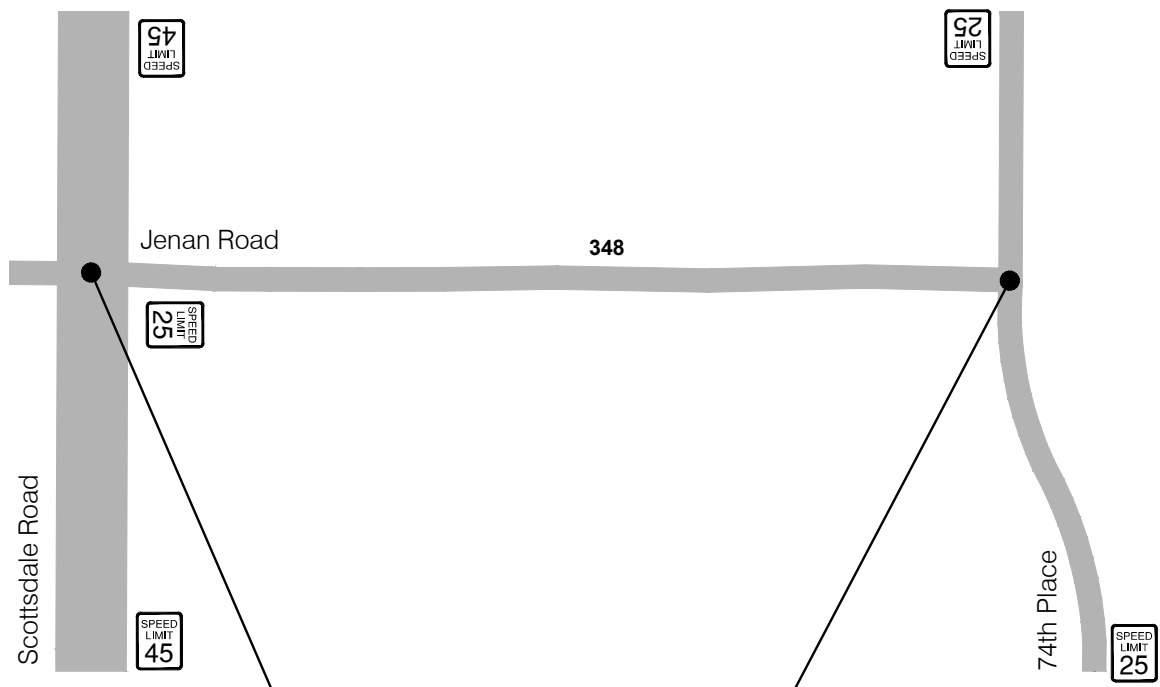
Intersection	NB			SB			EB			WB		
	L	T	R	L	T	R	L	T	R	L	T	R
<i>Scottsdale Road and Jenan Drive</i>												
AM Peak	C	A		C	A		F			F		B
PM Peak	A	A		D	A		F			F		C
<i>74<sup>th</sup> Place and Jenan Drive</i>												
AM Peak		A			A		A			-		
PM Peak		A			A		A			-		

The existing unsignalized intersections operate at an acceptable level of service with the exception of the westbound left/through movement and the eastbound left-turn movement at the intersection of Scottsdale Road and Jenan Drive during the peak hours. Drivers are anticipated to use alternate routes which utilize adjacent signalized intersections to access the roadway network during these peak periods. It is anticipated that during non-peak periods the LOS of the minor movements will improve.

#### 4.4 CRASH DATA

Crash data at the intersection of Scottsdale Road and Jenan Drive was obtained from the City of Scottsdale for September 2015 through January 2018. The crash data is included in the **Appendix**.

Based on the crash data obtained from the City of Scottsdale, there were eight crashes reported at the intersection of Scottsdale Road and Jenan Drive over the three year period. There was one non-incapacitating injury. One crash was a front to side angle crash, five were rear end crashes, one was a same direction sideswipe, and one was a rear-to-side crash.



**LEGEND**

- ← XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES
- XXXX AVERAGE DAILY TRAFFIC VOLUMES
- LANE USE
- STOP INTERSECTION CONTROL
- SPEED LIMIT XX SPEED LIMIT

## 5.0 PROJECTED TRAFFIC

### 5.1 SITE TRAFFIC FORECASTS

#### 5.1.1 TRIP GENERATION COMPARISON

The Institute of Transportation Engineers' (ITE) *Trip Generation, 10<sup>th</sup> Edition*, was used to obtain daily and peak-hour trip generation rates and inbound-outbound percentages, which were then used to estimate the number of daily and peak hour trips that can be attributed to the proposed development. The trip generation characteristics of the site are summarized in **Table 3**.

**Table 2. Trip Generation**

Land Use	ITE Code	Quantity	Units	Daily Total	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
Single-family detached housing	210	10	DUs	96	2	5	7	6	4	10

The proposed development is expected to generate 96 daily trips, with 7 trips occurring in the AM peak hour and 10 trips occurring in the PM peak hour.

Under the existing zoning, seven single-family dwelling units could be developed. A trip generation comparison of a potential land use under the existing zoning and the proposed development under the new zoning is summarized in **Table 4**.

**Table 3. Trip Generation Comparison**

Land Use	ITE Code	Quantity	Units	Daily Total	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
Single-family detached housing	210	10	DUs	96	2	5	7	6	4	10
Single-family detached housing	210	7	DUs	68	1	4	5	4	3	7
Total Trips				28	1	1	2	2	1	3

The calculations indicate that the proposed land use may increase daily trips by as much as 28 trips. During the AM peak hour, the proposed development may increase trip generation by 2 trips; during the PM peak hour, the trip generation may increase by 3 trips when compared to an existing potential use for the site. The increase in trip generation is not expected to significantly impact traffic conditions in the vicinity of the site.

#### 5.1.2 TRIP DISTRIBUTION

Distribution percentages for the site-generated traffic were developed based on the surrounding roadway system, population density, existing average daily traffic (ADT) volumes, and land uses in the vicinity of the project site. The trip distribution is shown in **Figure 4**.

### 5.1.3 TRAFFIC ASSIGNMENT

Trips generated by the proposed development were assigned to the roadway network on the basis of the trip distribution and the likely travel patterns to and from the site. **Figure 5** shows the results of the traffic assignment.

## 5.2 FUTURE TRAFFIC FORECASTING

The background traffic volumes for the buildout year 2020 were calculated based on 2016 traffic counts and the calculated annual traffic growth rate. **Table 5** shows the closest available average daily traffic (ADT) volumes in the vicinity of the site and the corresponding growth rate. The 2016 counts were taken from the City of Scottsdale ADT count map, and the projected 2030 volumes were taken from the City of Scottsdale Transportation Master Plan (TMP).

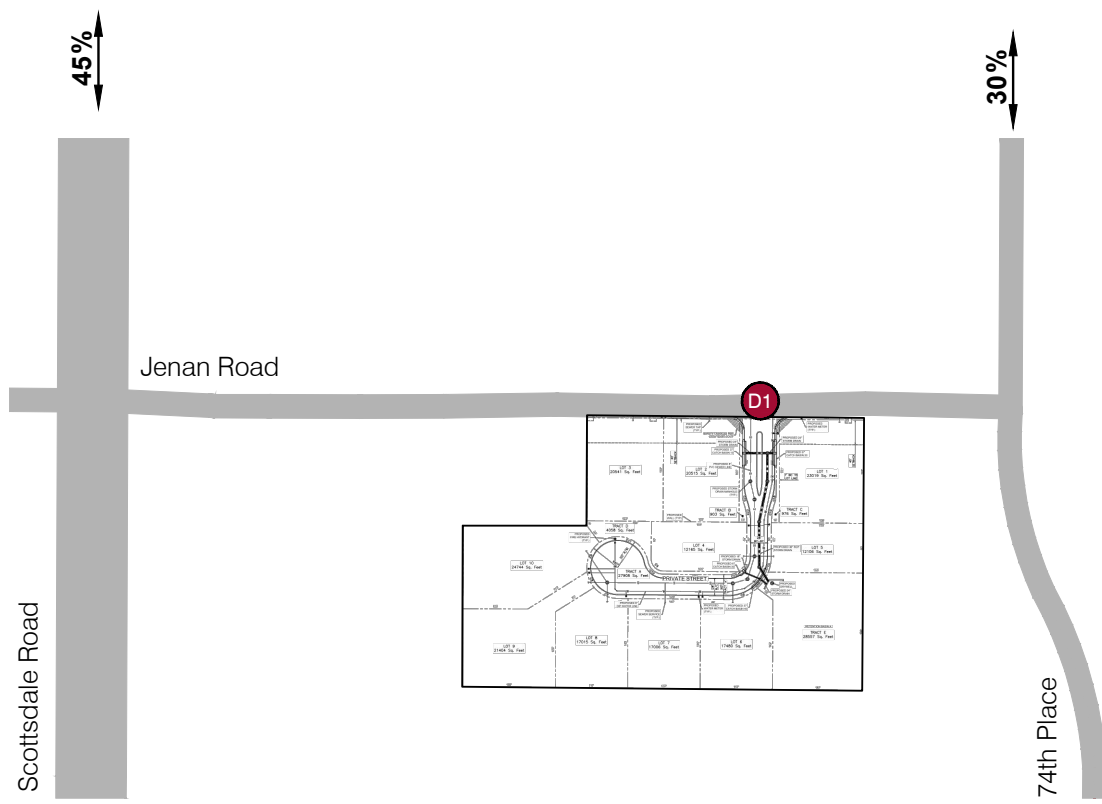
**Table 4. Traffic Growth**

Roadway	2016 ADT (vehicles per day, both directions)	2030 ADT (vehicles per day, both directions)	Average Annual Growth
Scottsdale Road	38,800	45,000	1.1%

On the basis of the above growth rates, a conservative annual growth rate of 2.0 percent per year was applied to the existing turning movements to obtain background traffic volumes for the year 2020. The resulting 2020 background traffic volumes are shown in **Figure 6**.

## 5.3 TOTAL TRAFFIC

The results of the traffic assignment were added to the year 2020 background traffic volumes shown in **Figure 6** to produce total traffic volumes for the study area. These total traffic volumes are shown in **Figure 7**.

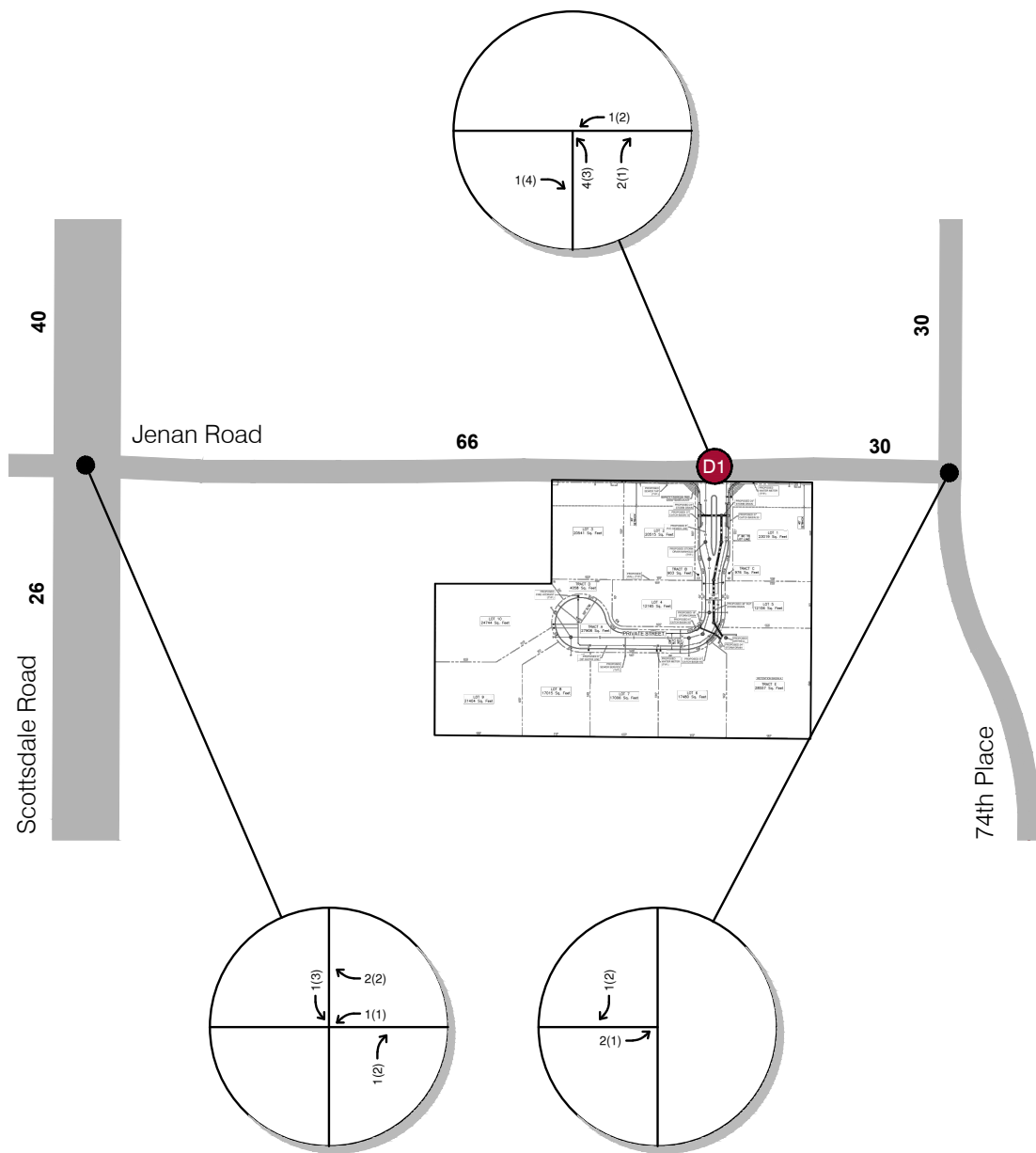


LEGEND

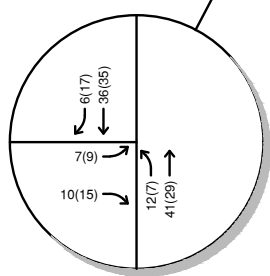
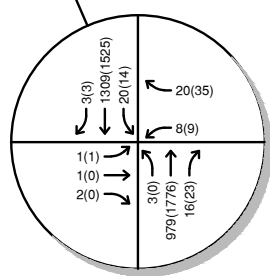
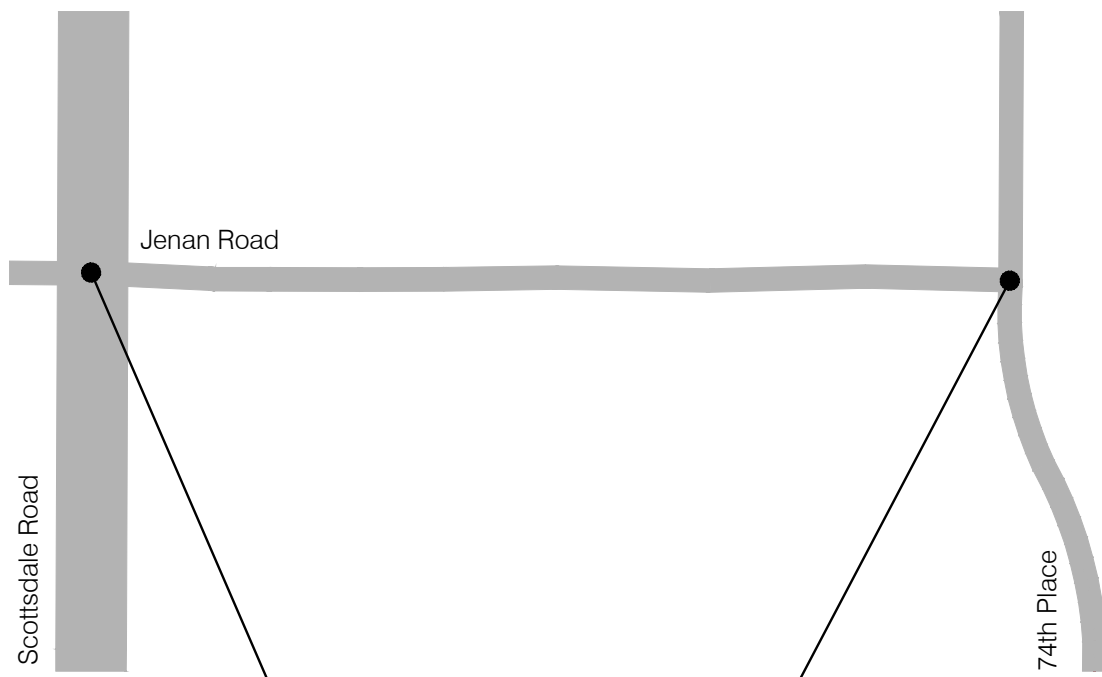
XX%

DISTRIBUTION OF PROJECT TRIPS

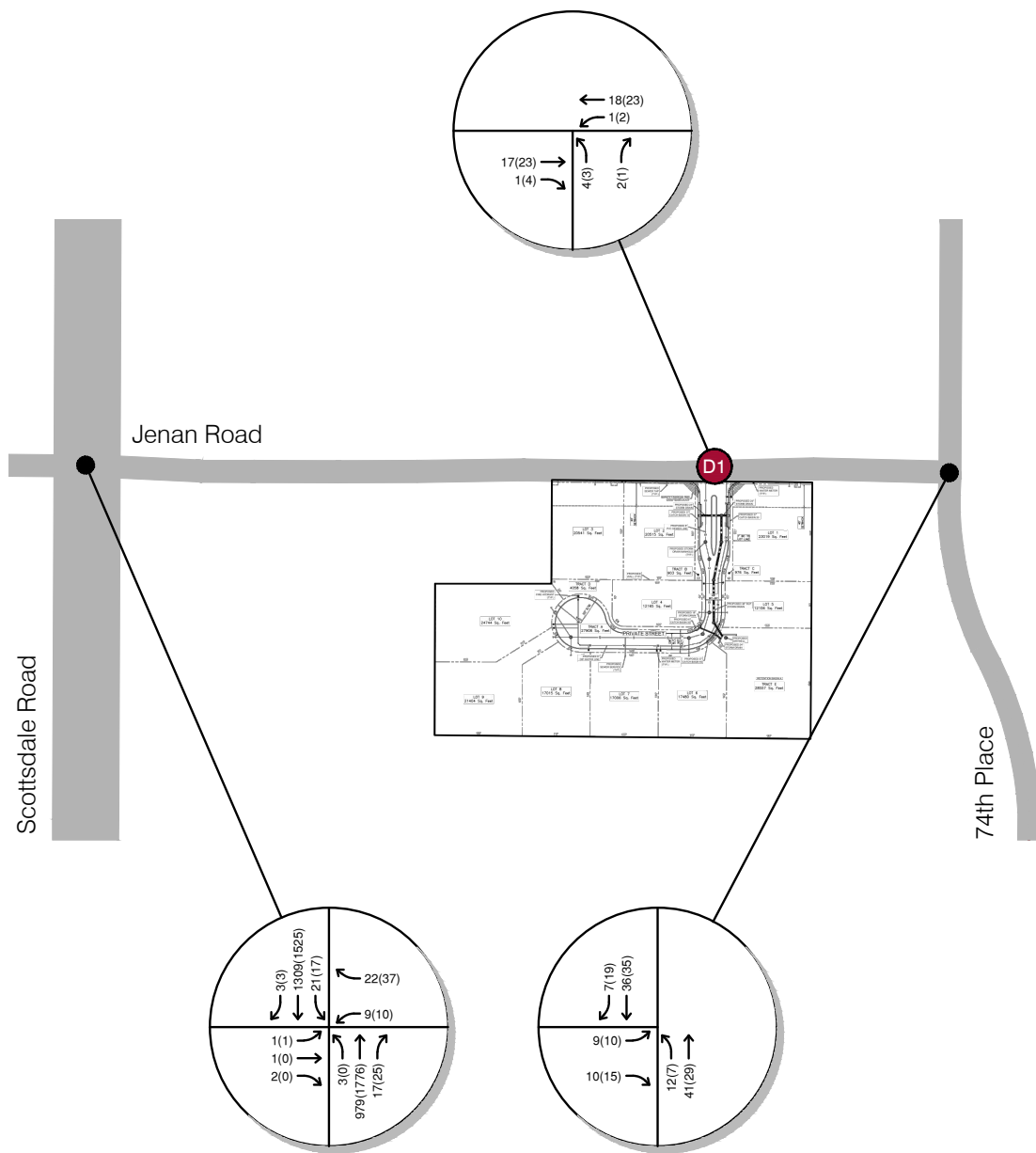




LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES



LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES





## 6.0 TRAFFIC AND IMPROVEMENT ANALYSIS

### 6.1 LEVEL OF SERVICE ANALYSIS

The LOS for the study area intersections for 2020 was evaluated using the *Highway Capacity Manual 6<sup>th</sup> Edition* methodology for unsignalized intersections using *Synchro 10* analysis software. LOS analysis worksheets are included in the **Appendix**.

#### 6.1.1 2020 BACKGROUND TRAFFIC LEVEL OF SERVICE ANALYSIS

The unsignalized intersections in the study area were evaluated on the basis of the 2020 background traffic shown in **Figure 6**, and the existing geometry shown in **Figure 3**. The results of the analysis for the unsignalized intersections is shown in **Table 5**.

**Table 5. 2020 Background Level of Service: Unsignalized Intersections**

Intersection	NB			SB			EB			WB		
	L	T	R	L	T	R	L	T	R	L	T	R
<i>Scottsdale Road and Jenan Drive</i>												
AM Peak	C	A	C	A	F	F	B					
PM Peak	A	A	D	A	F	F	C					
<i>74<sup>th</sup> Place and Jenan Drive</i>												
AM Peak	A			A			A			-	-	-
PM Peak	A			A			A			-	-	-

The unsignalized intersections are expected to operate at a satisfactory LOS in 2020, with the exception of the westbound left/through movement and the eastbound left-turn movement at the intersection of Scottsdale Road/Jenan Drive during the peak hours. Drivers are anticipated to use alternate routes which utilize adjacent signalized intersections to access the roadway network during these peak periods. It is anticipated that during non-peak periods the LOS of the minor movements will improve.

#### 6.1.1 2020 TOTAL TRAFFIC LEVEL OF SERVICE ANALYSIS

The unsignalized intersections in the study area were evaluated on the basis of the 2020 total traffic shown in **Figure 7**, and the recommended geometry shown in **Figure 8**. The results of the analysis for the unsignalized intersections and site driveway are shown in **Table 6**.

**Table 6. 2020 Total Traffic Level of Service: Unsignalized Intersections**

Intersection	NB			SB			EB			WB		
	L	T	R	L	T	R	L	T	R	L	T	R
<i>Scottsdale Road and Jenan Drive</i>												
AM Peak	C	A	C	A	F	F	B					
PM Peak	A	A	D	A	F	F	D					
<i>74<sup>th</sup> Place and Jenan Drive</i>												
AM Peak	A	A	A	A	-	-	-					
PM Peak	A	A	A	A	-	-	-					
<i>Driveway D1 and Jenan Drive</i>												
AM Peak	A	-	-	-	-	A	A	-				
PM Peak	A	-	-	-	-	A	A	-				

The unsignalized intersections' level of service results are essentially the same as in the 2020 background traffic condition.

The site driveway is expected to operate at an acceptable LOS in 2020 total traffic conditions.

## 6.2 LEFT-TURN STORAGE ANALYSIS

The Institute of Transportation Engineers, *Manual of Transportation Studies 2<sup>nd</sup> Edition* recommends a left turn lane when Figure 5-21 Suggested Warrants for Isolated Left-Turn Bays criteria is met. The criteria states that a left turn is to be provided when the left turn peak hour volume and the directional single lane volume is equal to or greater to the volume in the Figure 5.21 Suggested Warrants for Isolated Left-Turn Bays. Review of the 2020 total traffic volumes reveals that left turn lane warrants are met at Scottsdale Road and Jenan Drive.

The unsignalized intersection of Scottsdale Road and Jenan Drive was analyzed to determine the left-turn storage needed to accommodate the expected traffic volumes in the year 2020. The calculations associated with these conclusions are included in the **Appendix**. The recommended storage lengths are based on total traffic volumes shown in **Figure 7**.

**Table 7. Left Turn Storage**

Intersection and Approach	Existing	Recommended
<i>Scottsdale Road and Jenan Drive</i>		
- Northbound Approach	145 feet	100 feet*
- Southbound Approach	125 feet	100 feet*

\*Calculated value less than existing.

The existing left turn lane storage is expected to accommodate the 2020 total traffic volumes.

## 6.4 RIGHT-TURN LANES

Right-turn lanes are often recommended on roadways where right-turning vehicles create delays or safety problems for other traffic movements. The need for a right-turn lane depends on the speed of traffic on the road, the volume of traffic turning right, and the through traffic volume in the same lane as the right-turning traffic.

### 6.4.1 INTERSECTIONS

The City of Scottsdale Design Standards and Policies Manual Section 5-3.123 recommends a right-turn lane is required at all street intersections (public or private) on major arterials. Although warranted, the site generated right turns utilizing the existing right turn access from Scottsdale Road onto Jenan Drive is not expected to contribute significant volumes requiring the implementation of a right-turn lane.

The northbound right-turn movement at the intersection of Scottsdale Road and Jenan Drive is expected to operate at an acceptable LOS in 2020 and the increase in northbound right-turns due to the proposed development is expected to be nominal; therefore, a northbound right-turn lane at Scottsdale Road/Jenan Drive is not recommended.

### 6.4.2 DRIVEWAY

The City of Scottsdale recommends a right-turn deceleration lane at site driveways when the following criteria is met:

- At least 5,000 vehicles per day are expected to use the street;
- The 85<sup>th</sup> percentile traffic speed on the street is at least 35 miles per hour;
- At least 30 vehicles will make right turns into the driveway during a one hour period.

Review of the 2020 total traffic volumes reveals that a right turn deceleration lane is not warranted at the site driveway.

## 6.5 SITE CIRCULATION

In order to provide smooth ingress and egress to the proposed development, all site driveways should be constructed with appropriate throat lengths. Provision of sufficient throat lengths at all site driveways will prevent entering vehicles from obstructing traffic flow on the adjacent public street system and provide adequate on-site storage for exiting vehicles. Based on queuing analysis for unsignalized intersections, the recommended on-site storage lengths are summarized in **Table 9**.

**Table 8. On-Site Storage**

Intersection and Approach	Proposed	Recommended
<i>Driveway D1 and Jenan Drive</i>		
- Northbound Approach	65 feet	50 feet*

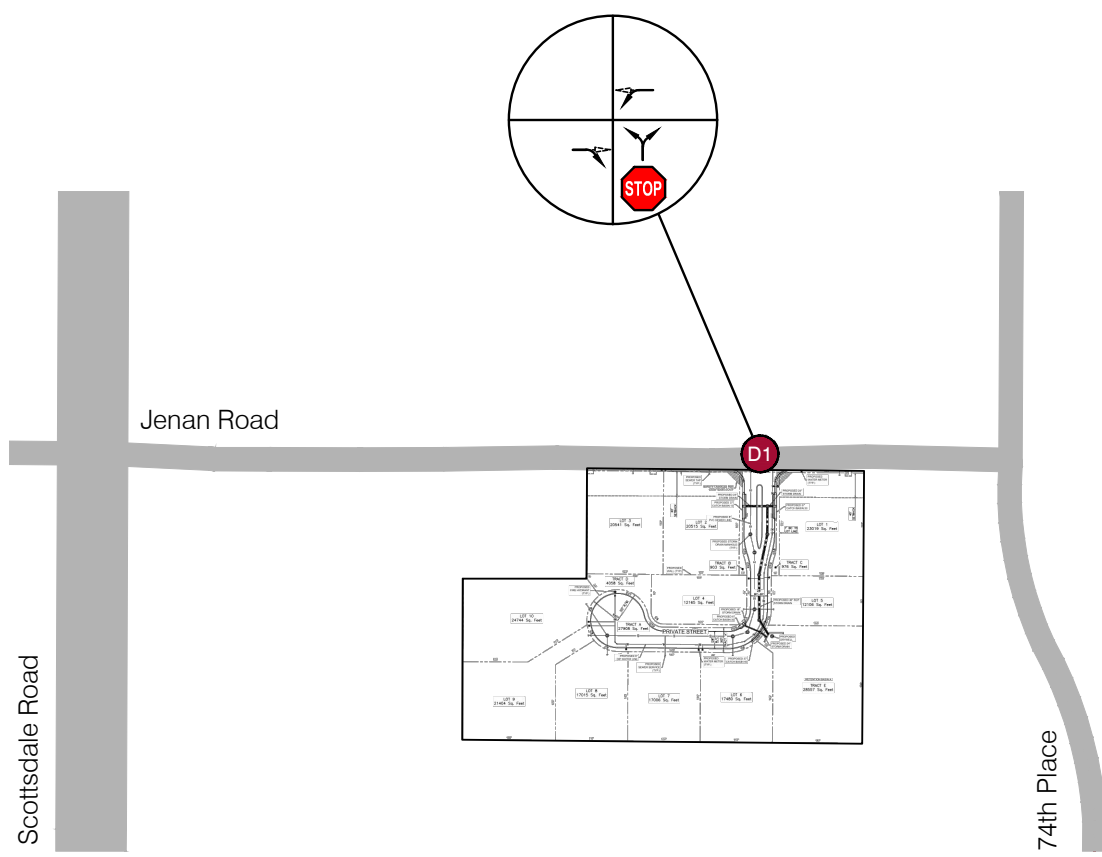
\*Calculated value less than proposed.

It is required that Gated Private Street and Driveway Entrances Section 2-1.302 provided by the City of Scottsdale Design Standards and Policies Manual meets entrance distance requirements. The site circulation is expected to accommodate two-way traffic.

## 6.6 SIGHT TRIANGLES

It is recommended that sight triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. The landscaping within sight triangles must not obstruct drivers' views of the adjacent travel lanes.





LEGEND	
	LANE USE
	INTERSECTION CONTROL

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed development is expected to generate 142 daily trips, with 11 trips occurring in the AM peak hour and 15 trips occurring in the PM peak hour.

The trip generation comparison of the proposed development plan versus allowed development under current zoning shows a slight increase in trip generation. The trip generation change is not expected to significantly impact traffic conditions.

The unsignalized intersections are expected to operate at a satisfactory LOS in 2020, with the exception of minor movements at the intersection of Scottsdale Road and Jenan Drive. Drivers are anticipated to use alternate routes which utilize adjacent signalized intersections to access the roadway network during these peak periods. It is anticipated that during non-peak periods the LOS of minor movements will improve.

The site driveway operates at an acceptable level of service in 2020 total traffic conditions.

The on-site storage at the site driveway is expected to be sufficient to accommodate projected site traffic volumes and satisfies the gated private street and driveway entrance requirements.

It is recommended that site triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. The landscaping within site triangles must not obstruct drivers' views of the adjacent travel lanes.

## APPENDIX

- Traffic Counts
- Crash Data
- Existing AM Traffic Capacity Analysis
- Existing PM Traffic Capacity Analysis
- 2020 Background AM Traffic Capacity Analysis
- 2020 Background PM Traffic Capacity Analysis
- 2020 Total AM Traffic Capacity Analysis
- 2020 Total PM Traffic Capacity Analysis
- Left Turn Storage Calculations
- On-Site Storage Calculations

## Traffic Counts

**Project #:** 18-1343-001

**TMC SUMMARY OF Scottsdale Rd. & Jenan Dr.**

**Scottsdale Rd.**

---

**Jenan Dr.**

---

APPROACH LANES			
	AM	MD	PM
TOTAL	3		6
	1258		2724
	19		13
			32

**N**

**Jenan Dr.**

---

TOTAL	AM	MD	PM
2	1		1
1	1		0
2	2		0

**CONTROL**

**2-Way Stop**

**EB-WB**

AM	MD	PM	TOTAL
19		34	53
0		0	0
8		9	17

TOTAL	AM	MD	PM
3	3		0
2648	941		1707
37	15		22

**APPROACH LANES**

**LOCATION #: 18-1343-001**

**TURNING MOVEMENT COUNT**

**Scottsdale Rd. & Jenan Dr.**  
(Intersection Name)

**THURSDAY**      **07/26/18**  
Day                      Date

**COUNT PERIODS**

<b>AM</b>	700AM	-	900AM
<b>NOON</b>		-	
<b>PM</b>	400PM	-	600PM

AM PEAK HOUR      730 AM

NOON PEAK HOUR                          

PM PEAK HOUR      445 PM

**Project #:** 18-1343-002

**TMC SUMMARY OF 74th Pl. & Jenan Dr.**

**74th Pl.**

---

**Jenan Dr.**

---

APPROACH LANES			
	AM	MD	PM
TOTAL	6	35	0
PM	16	34	0
TOTAL	22	69	0

**N**

**Jenan Dr.**

---

TOTAL	AM	MD	PM
16	7		9
0	0		0
24	10		14

**CONTROL**

**1-Way Stop**

**EB**

AM	MD	PM	TOTAL
0		0	0
0		0	0
0		0	0

**74th Pl.**

---

TOTAL	AM	MD	PM
19	12		7
67	39		28
0	0		0

**LOCATION #:** 18-1343-002

**TURNING MOVEMENT COUNT**

**74th Pl. & Jenan Dr.**  
(Intersection Name)

**THURSDAY** 07/26/18  
Day Date

**COUNT PERIODS**

<b>AM</b>	700AM	-	900AM
<b>NOON</b>		-	
<b>PM</b>	400PM	-	600PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR

PM PEAK HOUR 500 PM

Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Thursday, July 26, 2018

City: Scottsdale

Project #: 18-1343-003

Location: Jenan Dr. 1000' east of Scottsdale Rd.

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
00:00			1	3	12:00			0	2
00:15			2	0	12:15			1	2
00:30			0	1	12:30			0	0
00:45			0	3	12:45			0	1
01:00			0	2	13:00			1	2
01:15			1	1	13:15			0	0
01:30			0	1	13:30			1	1
01:45			2	3	13:45			3	5
02:00			1	3	14:00			2	3
02:15			1	1	14:15			0	1
02:30			1	0	14:30			1	2
02:45			0	3	14:45			0	3
03:00			1	1	15:00			0	0
03:15			1	1	15:15			1	1
03:30			0	3	15:30			2	2
03:45			2	4	15:45			1	4
04:00			0	3	16:00			2	4
04:15			2	4	16:15			3	3
04:30			2	4	16:30			4	5
04:45			5	9	16:45			2	11
05:00			1	4	17:00			5	4
05:15			4	3	17:15			4	6
05:30			5	4	17:30			5	5
05:45			6	16	17:45			3	17
06:00			3	1	18:00			1	3
06:15			2	3	18:15			1	1
06:30			1	1	18:30			3	1
06:45			2	8	18:45			3	8
07:00			2	4	19:00			2	0
07:15			4	3	19:15			2	2
07:30			5	4	19:30			2	3
07:45			2	13	19:45			4	10
08:00			3	2	20:00			2	1
08:15			4	5	20:15			4	2
08:30			2	4	20:30			1	0
08:45			1	10	20:45			2	9
09:00			2	2	21:00			6	3
09:15			3	1	21:15			2	3
09:30			2	0	21:30			4	3
09:45			1	8	21:45			0	12
10:00			1	1	22:00			0	1
10:15			1	0	22:15			0	1
10:30			1	1	22:30			0	0
10:45			0	3	22:45			0	0
11:00			1	1	23:00			0	0
11:15			1	3	23:15			0	0
11:30			0	2	23:30			0	0
11:45			1	3	23:45			0	0

**Total Vol.** 83 98 **181** 80 87 **167**

GPS Coordinates: 33.593054, -111.922538

**Daily Totals**

NB	SB	EB	WB	Combined
		163	185	<b>348</b>

**AM**

**PM**

Split %	45.9%	54.1%	<b>52.0%</b>	47.9%	52.1%	<b>48.0%</b>
<b>Peak Hour</b>	05:15	04:15	<b>05:00</b>	17:00	16:30	<b>16:45</b>
<b>Volume</b>	18	15	<b>30</b>	17	20	<b>36</b>
<b>P.H.F.</b>	0.75	0.94	<b>0.83</b>	0.85	0.80	<b>0.83</b>

20-ZN-2018

11/8/2019

## Crash Data



# CITY OF SCOTTSDALE

# '17 -'18 COLLISION SUMMARY

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. #1	SEV. #2	PHYS. #1	COND. #2	VIOLATION #1	#2	ACTION #1	#2	TRAV. DIR. #1	#2	MANNER OF COLLISION	COMMENTS
1727469	171212	1504	SCOTTSDALE	RD	JENAN	DR	AT		1	1	0	0	2	1	1	3	NB	NB	4	MULTI VEH 3
1718767	170824	1757	SCOTTSDALE	RD	JENAN	DR	AT		1	1	99	0	2	1	1	1	NB	NB	4	
1700385	170106	0723	SCOTTSDALE	RD	JENAN	DR	AT		1	1	0	0	12	1	8	1	SB	SB	6	
1800865	180112	1454	SCOTTSDALE	RD	JENAN	DR	S	100	1	1	0	0	2	1	1	3	NB	NB	4	

## KEY

### INJURY SEVERITY:

1=NO INJURY, 2=POSSIBLE INJURY, 3=NON-INCAPACITATING INJURY, 4=INCAPACITATING INJURY, 5=FATAL INJURY, 99=NOT REPORTED / UNKNOWN

### PHYSICAL CONDITION:

0=NO APPARENT INFLUENCE, 1=ILLNESS, 2=PHYSICAL IMPAIRMENT, 3=FELL ASLEEP / FATIGUED 4=ALCOHOL, 5=DRUGS, 6=MEDICATIONS, A=NO TEST GIVEN, B=TEST GIVEN, C=TEST REFUSED, D=TESTING UNKNOWN, 97=OTHER, 99=UNKNOWN

### VIOLATION:

1=NO IMPROPER ACTION, 2=SPEED TOO FAST FOR CONDITIONS, 3=EXCEEDED LAWFUL SPEED 4=FOLLOWED TOO CLOSELY. 5=RAN STOP SIGN, 6=DISREGARDED TRAFFIC SIGNAL 7=MADE IMPROPER TURN, 8=DROVE/RODE IN OPPOSING TRAFFIC LANE, 9=KNOWINGLY OPERATED WITH FAULTY / MISSING EQUIPMENT, 10=REQUIRED MOTORCYCLE SAFETY EQUIPMENT NOT USED, 11=PASSED IN NO PASSING ZONE, 12=UNSAFE LANE CHANGE, 13=FAILED TO KEEP IN PROPER LANE, 14=DISREGARDED PAVEMENT MARKINGS, 15=OTHER UNSAFE PASSING, 16=INATTENTION/DISTRACTION, 17=DID NOT USE CROSSWALK, 18=WALKED ON WRONG SIDE OF ROAD, 19=ELECTRONIC COMMUNICATIONS DEVICE, 20=FAILED TO YIELD RIGHT OF WAY (added August 2014), 97=OTHER, 99 UNKNOWN

### ACTION:

1=GOING STRAIGHT AHEAD, 2=SLOWING IN TRAFFICWAY, 3=STOPPED IN TRAFFICWAY, 4=MAKING LEFT TURN, 5=MAKING RIGHT TURN, 6=MAKING U-TURN, 7=OVERTAKING/PASSING, 8=CHANGING LANES, 9=NEGOTIATING A CURVE, 10=BACKING, 11=AVOIDING VEH/OBJ/PED/CYCLIST/ANIMAL, 12=ENTERING PARKING POSITION, 13=LEAVING PARKING POSITION, 14=PROPERLY PARKED, 15=IMPROPERLY PARKED, 16=DRIVERLESS MOVING VEHICLE, 17=CROSSING ROAD, 18=WALKING WITH TRAFFIC, 19=WALKING AGAINST TRAFFIC, 20=STANDING, 21=LYING, 22=GETTING ON OR OFF VEHICLE, 23=WORKING ON/PUSHING VEHICLE, 24=WORKING ON ROAD, 97=OTHER, 99=UNKNOWN

### MANNER OF COLLISION:

1=SINGLE VEHICLE, 2=ANGLE (front to side, other than left turn), 3=LEFT TURN, 4=REAR END (front to rear), 5=HEAD-ON (front to front, other than left turn), 6=SIDESWIPE (same direction), 7=SIDESWIPE (opposite direction), 8=REAR-TO-SIDE, 9=REAR TO REAR, 97=OTHER, 99=UNKNOWN

**TOTAL 4**

# CITY OF SCOTTSDALE

# '15 -'16 COLLISION SUMMARY

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1 #2	PHYS. COND. #1 #2	VIOLATION #1 #2	ACTION #1 #2	TRAV. DIR. #1 #2	MANNER OF COLLISION	COMMENTS
15-27463	151215	1632	SCOTTSDALE	RD	JENAN	DR	AT		1 2	0 0	2 1	1 3	NB NB	4	
15-25176	151117	1730	SCOTTSDALE	RD	JENAN	DR	AT		3 1	0 0	12 1	8 1	NB NB	8	
16-06863	160322	1723	SCOTTSDALE	RD	JENAN	DR	S	189	1 3	0 0	4 1	1 1	NB NB	4	MULTI VEH 3
15-19373	150904	1551	SCOTTSDALE	RD	JENAN	DR	E	1000	1 1	0 0	1	97 1	SB EB	2	

## KEY

INJURY SEVERITY: 1=NO INJURY, 2=POSSIBLE INJURY, 3=NON-INCAPACITATING INJURY, 4=INCAPACITATING INJURY, 5=FATAL INJURY, 99=NOT REPORTED / UNKNOWN

PHYSICAL CONDITION: 0=NO APPARENT INFLUENCE, 1=ILLNESS, 2=PHYSICAL IMPAIRMENT, 3=FELL ASLEEP / FATIGUED 4=ALCOHOL, 5=DRUGS, 6=MEDICATIONS, A=NO TEST GIVEN, B=TEST GIVEN, C=TEST REFUSED, D=TESTING UNKNOWN, 97=OTHER, 99=UNKNOWN

VIOLATION: 1=NO IMPROPER ACTION, 2=SPEED TOO FAST FOR CONDITIONS, 3=EXCEEDED LAWFUL SPEED 4=FOLLOWED TOO CLOSELY. 5=RAN STOP SIGN, 6=DISREGARDED TRAFFIC SIGNAL7=MADE IMPROPER TURN, 8=DROVE/RODE IN OPPOSING TRAFFIC LANE, 9=KNOWINGLY OPERATED WITH FAULTY / MISSING EQUIPMENT, 10=REQUIRED MOTORCYCLE SAFETY EQUIPMENT NOT USED, 11=PASSED IN NO PASSING ZONE, 12=UNSAFE LANE CHANGE, 13=FAILED TO KEEP IN PROPER LANE, 14=DISREGARDED PAVEMENT MARKINGS, 15=OTHER UNSAFE PASSING, 16=INATTENTION/DISTRACTION, 17=DID NOT USE CROSSWALK, 18=WALKED ON WRONG SIDE OF ROAD, 19=ELECTRONIC COMMUNICATIONS DEVICE, 20=FAILED TO YIELD RIGHT OF WAY (added August 2014), 97=OTHER, 99 UNKNOWN

ACTION: 1=GOING STRAIGHT AHEAD, 2=SLOWING IN TRAFFICWAY, 3=STOPPED IN TRAFFICWAY, 4=MAKING LEFT TURN, 5=MAKING RIGHT TURN, 6=MAKING U-TURN, 7=OVERTAKING/PASSING, 8=CHANGING LANES, 9=NEGOTIATING A CURVE, 10=BACKING, 11=AVOIDING VEH/OBJ/PED/CYCLIST/ANIMAL, 12=ENTERING PARKING POSITION, 13=LEAVING PARKING POSITION, 14=PROPERLY PARKED, 15=IMPROPERLY PARKED, 16=DRIVERLESS MOVING VEHICLE, 17=CROSING ROAD, 18=WALKING WITH TRAFFIC, 19=WALKING AGAINST TRAFFIC, 20=STANDING, 21=LYING, 22=GETTING ON OR OFF VEHICLE, 23=WORKING ON/PUSHING VEHICLE, 24=WORKING ON ROAD, 97=OTHER, 99=UNKNOWN

MANNER OF COLLISION: 1=SINGLE VEHICLE, 2=ANGLE (front to side, other than left turn), 3=LEFT TURN, 4=REAR END (front to rear), 5=HEAD-ON (front to front, other than left turn), 6=SIDESWIPE (same direction), 7=SIDESWIPE (opposite direction), 8=REAR-TO-SIDE, 9=REAR TO REAR, 97=OTHER, 99=UNKNOWN

**TOTAL 4**

# **Existing AM Traffic Capacity Analysis**

HCM 6th TWSC  
1: Scottsdale Road & Jenan Road

Scottsdale Road and Jenan Road

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	2	8	0	19	3	941	15	19	1258	3
Future Vol, veh/h	1	1	2	8	0	19	3	941	15	19	1258	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	145	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	56	56	56	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	2	4	14	0	34	3	1046	17	21	1398	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1866	2511	701	1663	2504	532	1401	0	0	1063	0	0
Stage 1	1442	1442	-	1061	1061	-	-	-	-	-	-	-
Stage 2	424	1069	-	602	1443	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	77	28	327	102	28	421	249	-	-	365	-	-
Stage 1	97	196	-	181	299	-	-	-	-	-	-	-
Stage 2	529	296	-	413	196	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	67	26	327	90	26	421	249	-	-	365	-	-
Mov Cap-2 Maneuver	67	26	-	90	26	-	-	-	-	-	-	-
Stage 1	96	185	-	179	295	-	-	-	-	-	-	-
Stage 2	481	292	-	380	185	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	65.9		25.6		0.1		0.2	
HCM LOS	F		D					




Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	249	-	-	67 90 421	365	-	-
HCM Lane V/C Ratio	0.013	-	-	0.119 0.159 0.081	0.058	-	-
HCM Control Delay (s)	19.7	-	-	65.9 52.4 14.3	15.5	-	-
HCM Lane LOS	C	-	-	F F B	C	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4 0.5 0.3	0.2	-	-

HCM 6th TWSC  
2: 74th Place & Jenan Road

Scottsdale Road and Jenan Road

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	10	12	39	35	6
Future Vol, veh/h	7	10	12	39	35	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	75	75	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	14	16	52	48	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	136	52	56
Stage 1	52	-	-
Stage 2	84	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	857	1016	1549
Stage 1	970	-	-
Stage 2	939	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	848	1016	1549
Mov Cap-2 Maneuver	848	-	-
Stage 1	959	-	-
Stage 2	939	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	939	-	-
HCM Lane V/C Ratio	0.01	-	0.025	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

# **Existing PM Traffic Capacity Analysis**

1: Scottsdale Road & Jenan Road

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	1	0	0	9	0	34	0	1707	22	13	1466	3
Future Vol, veh/h	1	0	0	9	0	34	0	1707	22	13	1466	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	145	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	77	77	96	96	96	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	12	0	44	0	1778	23	15	1647	3

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2390	3480	825	2479	3470	901	1650	0	0	1801	0	0
Stage 1	1679	1679	-	1790	1790	-	-	-	-	-	-	-
Stage 2	711	1801	-	689	1680	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	36	6	271	32	6	241	188	-	-	158	-	-
Stage 1	66	150	-	55	132	-	-	-	-	-	-	-
Stage 2	355	130	-	366	150	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	27	5	271	30	5	241	188	-	-	158	-	-
Mov Cap-2 Maneuver	27	5	-	30	5	-	-	-	-	-	-	-
Stage 1	66	136	-	55	132	-	-	-	-	-	-	-
Stage 2	290	130	-	331	136	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB				
HCM Control Delay, s	160.3		57.6		0			0.3				
HCM LOS	F		F									




Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	188	-	-	27 30 241	158	-	-
HCM Lane V/C Ratio	-	-	-	0.148 0.39 0.183	0.092	-	-
HCM Control Delay (s)	0	-	-	160.3 187.4 23.3	30.1	-	-
HCM Lane LOS	A	-	-	F F C	D	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5 1.2 0.7	0.3	-	-

HCM 6th TWSC  
2: 74th Place & Jenan Road

Scottsdale Road and Jenan Road

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	14	7	28	34	16
Future Vol, veh/h	9	14	7	28	34	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	88	88	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	19	8	32	38	18

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	95	47	56
Stage 1	47	-	-
Stage 2	48	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	905	1022	1549
Stage 1	975	-	-
Stage 2	974	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	900	1022	1549
Mov Cap-2 Maneuver	900	-	-
Stage 1	970	-	-
Stage 2	974	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	971	-	-
HCM Lane V/C Ratio	0.005	-	0.033	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-






# **2020 Background AM Traffic Capacity Analysis**

HCM 6th TWSC  
1: Scottsdale Road & Jenan Road

Scottsdale Road and Jenan Road

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕↕↕		↕	↕↕↕	
Traffic Vol, veh/h	1	1	2	8	0	20	3	979	16	20	1309	3
Future Vol, veh/h	1	1	2	8	0	20	3	979	16	20	1309	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	145	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	77	77	96	96	96	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	8	10	0	26	3	1020	17	22	1471	3
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1931	2560	737	1669	2553	519	1474	0	0	1037	0	0
Stage 1	1517	1517	-	1035	1035	-	-	-	-	-	-	-
Stage 2	414	1043	-	634	1518	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	70	26	310	102	26	429	230	-	-	376	-	-
Stage 1	86	180	-	188	307	-	-	-	-	-	-	-
Stage 2	536	305	-	395	180	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	62	24	310	82	24	429	230	-	-	376	-	-
Mov Cap-2 Maneuver	62	24	-	82	24	-	-	-	-	-	-	-
Stage 1	85	169	-	186	303	-	-	-	-	-	-	-
Stage 2	497	301	-	354	169	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	82.2		25.7		0.1		0.2					
HCM LOS	F		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	230	-	-	62	82	429	376	-	-			
HCM Lane V/C Ratio	0.014	-	-	0.258	0.127	0.061	0.06	-	-			
HCM Control Delay (s)	20.9	-	-	82.2	55.2	13.9	15.2	-	-			
HCM Lane LOS	C	-	-	F	F	B	C	-	-			
HCM 95th %tile Q(veh)	0	-	-	0.9	0.4	0.2	0.2	-	-			




Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	10	12	41	36	6
Future Vol, veh/h	7	10	12	41	36	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	88	88	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	14	14	47	40	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	119	44	47	0	-	0
Stage 1	44	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	877	1026	1560	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	869	1026	1560	-	-	-
Mov Cap-2 Maneuver	869	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	1.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1560	-	955	-	-	
HCM Lane V/C Ratio	0.009	-	0.025	-	-	
HCM Control Delay (s)	7.3	0	8.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

# **2020 Background PM Traffic Capacity Analysis**

HCM 6th TWSC  
1: Scottsdale Road & Jenan Road

Scottsdale Road and Jenan Road

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↖	↗↗↗		↖	↗↗↗	
Traffic Vol, veh/h	1	0	0	9	0	35	0	1776	23	14	1525	3
Future Vol, veh/h	1	0	0	9	0	35	0	1776	23	14	1525	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	145	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	77	77	96	96	96	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	12	0	45	0	1850	24	16	1713	3
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2487	3621	858	2579	3610	937	1716	0	0	1874	0	0
Stage 1	1747	1747	-	1862	1862	-	-	-	-	-	-	-
Stage 2	740	1874	-	717	1748	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	31	5	258	27	5	228	174	-	-	145	-	-
Stage 1	59	138	-	49	121	-	-	-	-	-	-	-
Stage 2	340	120	-	352	138	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	23	4	258	25	4	228	174	-	-	145	-	-
Mov Cap-2 Maneuver	23	4	-	25	4	-	-	-	-	-	-	-
Stage 1	59	123	-	49	121	-	-	-	-	-	-	-
Stage 2	272	120	-	313	123	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	192		68.8		0		0.3					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	174	-	-	23 25 228	145	-	-					
HCM Lane V/C Ratio	-	-	-	0.174 0.468 0.199	0.108	-	-					
HCM Control Delay (s)	0	-	-	192 240.5 24.7	32.8	-	-					
HCM Lane LOS	A	-	-	F F C	D	-	-					
HCM 95th %tile Q(veh)	0	-	-	0.5 1.4 0.7	0.4	-	-					

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	15	7	29	35	17
Future Vol, veh/h	9	15	7	29	35	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	88	88	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	21	8	33	39	19
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	98	49	58	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	49	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	901	1020	1546	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	896	1020	1546	-	-	-
Mov Cap-2 Maneuver	896	-	-	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	1.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1546	-	970	-	-	
HCM Lane V/C Ratio	0.005	-	0.034	-	-	
HCM Control Delay (s)	7.3	0	8.8	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

# **2020 Total AM Traffic Capacity Analysis**

HCM 6th TWSC  
1: Scottsdale Road & Jenan Road

Scottsdale Road and Jenan Road




Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	2	9	0	22	3	979	17	21	1309	3
Future Vol, veh/h	1	1	2	9	0	22	3	979	17	21	1309	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	145	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	56	56	56	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	2	4	16	0	39	3	1088	19	23	1454	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1943	2615	729	1733	2607	554	1457	0	0	1107	0	0
Stage 1	1502	1502	-	1104	1104	-	-	-	-	-	-	-
Stage 2	441	1113	-	629	1503	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	69	24	313	93	24	408	234	-	-	347	-	-
Stage 1	88	183	-	168	285	-	-	-	-	-	-	-
Stage 2	517	282	-	398	183	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	59	22	313	80	22	408	234	-	-	347	-	-
Mov Cap-2 Maneuver	59	22	-	80	22	-	-	-	-	-	-	-
Stage 1	87	171	-	166	281	-	-	-	-	-	-	-
Stage 2	461	278	-	363	171	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	76.8		28.2		0.1		0.3	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	234	-	-	58 80 408	347	-	-
HCM Lane V/C Ratio	0.014	-	-	0.138 0.201 0.096	0.067	-	-
HCM Control Delay (s)	20.6	-	-	76.8 61 14.8	16.1	-	-
HCM Lane LOS	C	-	-	F F B	C	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4 0.7 0.3	0.2	-	-






Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	10	12	41	36	7
Future Vol, veh/h	9	10	12	41	36	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	75	75	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	14	16	55	49	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	141	54	59	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	852	1013	1545	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	936	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	843	1013	1545	-	-	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	936	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9	1.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1545	-	925	-	-	
HCM Lane V/C Ratio	0.01	-	0.029	-	-	
HCM Control Delay (s)	7.4	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 6th TWSC  
3: Driveway D1 & Jenan Road

Scottsdale Road and Jenan Road

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	17	1	1	18	4	2
Future Vol, veh/h	17	1	1	18	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	1	1	20	4	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	19
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1597
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1597
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	997	-	-	1597	-
HCM Lane V/C Ratio	0.007	-	-	0.001	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# **2020 Total PM Traffic Capacity Analysis**

HCM 6th TWSC  
1: Scottsdale Road & Jenan Road

Scottsdale Road and Jenan Road

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	1	0	0	10	0	37	0	1776	25	17	1525	3
Future Vol, veh/h	1	0	0	10	0	37	0	1776	25	17	1525	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	145	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	77	77	96	96	96	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	13	0	48	0	1850	26	19	1713	3




Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2493	3629	858	2586	3617	938	1716	0	0	1876	0	0
Stage 1	1753	1753	-	1863	1863	-	-	-	-	-	-	-
Stage 2	740	1876	-	723	1754	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	31	5	258	27	5	228	174	-	-	144	-	-
Stage 1	58	138	-	48	121	-	-	-	-	-	-	-
Stage 2	340	119	-	349	137	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	22	4	258	24	4	228	174	-	-	144	-	-
Mov Cap-2 Maneuver	22	4	-	24	4	-	-	-	-	-	-	-
Stage 1	58	120	-	48	121	-	-	-	-	-	-	-
Stage 2	268	119	-	303	119	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	202	76.9	0	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	174	-	-	22 24 228	144	-	-
HCM Lane V/C Ratio	-	-	-	0.182 0.541 0.211	0.133	-	-
HCM Control Delay (s)	0	-	-	202 269 25	33.8	-	-
HCM Lane LOS	A	-	-	F F D	D	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5 1.6 0.8	0.4	-	-




HCM 6th TWSC  
2: 74th Place & Jenan Road

Scottsdale Road and Jenan Road

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	15	7	29	35	19
Future Vol, veh/h	10	15	7	29	35	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	88	88	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	21	8	33	39	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	99	50	60	0	-	0
Stage 1	50	-	-	-	-	-
Stage 2	49	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	900	1018	1544	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	896	1018	1544	-	-	-
Mov Cap-2 Maneuver	896	-	-	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	1.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1544	-	965	-	-	
HCM Lane V/C Ratio	0.005	-	0.036	-	-	
HCM Control Delay (s)	7.3	0	8.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 6th TWSC  
3: Driveway D1 & Jenan Road

Scottsdale Road and Jenan Road

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	4	2	23	3	1
Future Vol, veh/h	23	4	2	23	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	4	2	25	3	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	29
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1584
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1584
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	974	-	-	1584	-
HCM Lane V/C Ratio	0.004	-	-	0.001	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

## Left-Turn Storage Calculations

### Left-turn Storage Analysis

[illegible]



## **On-Site Storage Calculations**

### On-site Storage Analysis

[illegible]